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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,848	02/20/2004	Stanford W. Crane JR.	040879-5094-01	1659
9629	7590	02/03/2006	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			THAI, LUAN C	
			ART UNIT	PAPER NUMBER
			2891	

DATE MAILED: 02/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/781,848

Applicant(s)

CRANE ET AL.

Examiner

Luan Thai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 27-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-29 is/are rejected.
- 7) ☒ Claim(s) 30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

This Office Action is responsive to the Request for Reconsideration filed November 17, 2005.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al. (5,742,481 hereafter "Murphy-481" of record) in view of Hembree (6,504,389).

Regarding claim 27, Murphy-481 (see specifically figures 1 and 7-8-9) discloses a semiconductor die package comprising: a package base (e.g., alignment member or guide member) including a plurality of side walls (224) and a floor (214) having a plurality of holes (236) formed therethrough, wherein interior surfaces of the side walls and floor form a cavity sized to hold a semiconductor die (202). Murphy-481 further discloses electrically conductive frames (206) formed into the floor (214), each conductive frame (206) having a hole formed therein (see figure 9) and the hole through the floor (214) registering with the hole (236) of the frame; electrically-conductive pins (212) inserting into the holes (236) in the floor (214) such that the pins pass into the holes of the frame (206) and extend from an exterior surface of the floor (214) (see figure 7-8); coupling solder balls (204) to the frames (206) and to the pins (212) (Col. 6, lines 28+). Thus, Murphy-481 does teach a package base (e.g., alignment member or

guide member) including a plurality of sidewalls (224) and a floor (214), and an electrically conductive frame (206) formed into the floor (214) but Murphy-481 fails to disclose the package base being formed by *molding* with the conductive frame molded into the floor of the package base.

It should be noted that molding process is widely used to form a package base (e.g., alignment member or guide member with conductive frames molded into the floor of the package base) in semiconductor art since it provides a simplest way to form the package base. For instance, Hembree (see Figs. 4C-4D) discloses a package base (46/48) (e.g., alignment member or guide member) including sidewalls (48) and a floor (46) with conductive frames (52) molded into the floor (46) of the package base, and the package base is formed by molding process (Col. 9, lines 6+).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use molding process to form the package base since such process is commonly used in the art, as taught by Hembree.

Note that the specification contains no disclosure of either the critical nature of the claimed “molding process” in forming the package base or any unexpected results arising therefrom. Thus, one skilled in the art at the time the invention was made would have been obvious to use any process, including molding process as disclose by Hembree, to form the package base in Murphy-481’s package.

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3. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al. (5,742,481 hereafter “Murphy-481” of record) and Hembree (6,504,389) as applied to claim 27 and further in view of Murphy (5,877,554 hereafter “Murphy-554” of record).

Regarding claims 28-29, the proposed method of “Murphy-481” and Hembree discloses the claimed invention as detailed above except for teaching a lid being attached to the sidewalls of the base.

“Murphy-554” while related to a similar structure design teach lid (30) being attached to the sidewalls of the base (26-16) for securing the package device into the housing assembly (Col. 4, lines 4+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize that combining “Murphy-554” teaching of the lid with “Murphy-481” invention would have been beneficial because Murphy-554” teaching helps securing the package device into the housing assembly.

*Allowable Subject Matter*

4. Claim 30 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

The prior art taken either singly or in combination fails to anticipate or fairly suggest the method steps of: placing a substrate over the solder ball; placing the semiconductor die on the substrate, and electrically connecting the semiconductor die to the substrate, as recited in claim 30; especially when these limitations are considered within the specific combination claimed.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is 571-272-1935. The examiner can normally be reached on 6:30 AM - 5:00 PM, Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bradley W. Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Luan Thai**

Primary Examiner

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January 31, 2006